

WHAT IS CLAIMED IS:

1. An image input unit capable of performing pixel shift photography, said image input unit comprising:

5 a photographic optical system which forms an image of a subject in a predetermined position;

an image sensing unit which generates image data corresponding to the image of the subject;

a pixel shift mechanism which displaces said image sensing unit by a predetermined amount;

10 a pixel shift mechanism control unit which controls said pixel shift mechanism so as to displace said image sensing unit by the predetermined amount;

an image combining unit which generates image data for one image by combining the image data for a plurality of images output before and after the displacement of said image sensing unit; and

15 a judgment unit which judges whether the pixel shift photography has been normally performed or not, based on the image data for a plurality of images output before and after the displacement of said image sensing unit.

2. The image input unit according to claim 1, wherein said judgment unit comprises:

25 a pixel shift evaluation value calculation unit which calculates a pixel shift evaluation value for judging whether

the pixel shift photography has been normally performed or not, based on the image data for a plurality of images output before and after the displacement of said image sensing unit; and

5 a pixel shift photography judgment unit which judges whether the pixel shift photography has been normally performed or not, based on the pixel shift evaluation value calculated by said pixel shift evaluation value calculation unit.

10 3. The image input unit according to claim 2, wherein said pixel shift evaluation value calculation unit calculates an amount of shift between the image data for the plurality of images output before and after the  
15 displacement of said image sensing unit, as the pixel shift evaluation value; and

said pixel shift photography judgment unit judges whether the pixel shift photography has been performed normally, based on the amount of shift calculated by said  
20 pixel shift evaluation value calculation unit.

4. The image input unit according to claim 3, wherein when calculating the amount of shift between the image data for the plurality of images, said pixel shift evaluation  
25 value calculation unit calculates each amount of shift for

a plurality of areas of the image data.

5. The image input unit according to claim 4, wherein said pixel shift photography judgment unit judges that the pixel shift photography has been performed normally when a part of or the whole of the amount of shift in the plurality of areas calculated by said pixel shift evaluation value calculation unit is within a predetermined range.

10 6. The image input unit according to claim 4, wherein said pixel shift photography judgment unit judges that the pixel shift photography has not been performed normally when a part of or the whole of the amount of shift in the plurality of areas calculated by said pixel shift evaluation value calculation unit is out of the predetermined range, and there is a predetermined relation in the amount of shift in the plurality of areas.

7. The image input unit according to claim 4, wherein said pixel shift photography judgment unit judges that the pixel shift photography has been performed normally, but a part of the subject has moved, in the case where a part of or the whole of the amount of shift in the plurality of areas calculated by said pixel shift evaluation value calculation unit is out of the predetermined range, but there

is no predetermined relation in the amount of shift in the plurality of areas.

8. The image input unit according to claim 4, wherein  
5 said judgment unit comprises a reliability evaluation unit which calculates reliability data indicating the reliability of each amount of shift in the plurality of areas calculated by said pixel shift evaluation value calculation unit; and

10 said pixel shift photography judgment unit judges whether the pixel shift photography has been performed normally, based on the amount of shift in the plurality of areas and the reliability data.

15 9. The image input unit according to claim 2, wherein said pixel shift evaluation value calculation unit calculates the coincidence degree for a target image data, based on an image data output by said image sensing unit before and after being displaced, as the pixel shift  
20 evaluation value; and

said pixel shift photography judgment unit judges whether the pixel shift photography has been performed normally, based on the coincidence degree calculated by said pixel shift evaluation value calculation unit.

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10. The image input unit according to claim 9, wherein  
said pixel shift evaluation value calculation unit  
calculates the coincidence degree, respectively, for the  
plurality of areas of the image data, at the time of  
5 calculating the coincidence degree.

11. The image input unit according to claim 10, wherein  
said pixel shift photography judgment unit judges that the  
pixel shift photography has been performed normally when  
10 a part of or the whole of the coincidence degree in the  
plurality of areas calculated by said pixel shift evaluation  
value calculation unit is within a predetermined range.

12. The image input unit according to claim 10, wherein  
15 said pixel shift photography judgment unit judges that the  
pixel shift photography has not been performed normally when  
a part of or the whole of the coincidence degree in the  
plurality of areas calculated by said pixel shift evaluation  
value calculation unit is out of the predetermined range,  
20 and there is a predetermined relation in the coincidence  
degree in the plurality of areas.

13. The image input unit according to claim 10, wherein  
said pixel shift photography judgment unit judges that the  
25 pixel shift photography has been performed normally, but

a part of the subject has moved, in the case where a part of or the whole of the coincidence degree in the plurality of areas calculated by said pixel shift evaluation value calculation unit is out of the predetermined range, but there is no predetermined relation in the coincidence degree in the plurality of areas.

14. The image input unit according to claim 10, wherein said judgment unit comprises a reliability evaluation unit which calculates reliability data indicating the reliability of each coincidence degree in the plurality of areas calculated by said pixel shift evaluation value calculation unit; and

said pixel shift photography judgment unit judges whether the pixel shift photography has been performed normally, based on the coincidence degree in the plurality of areas and the reliability data.

15. The image input unit according to claim 1, further comprising an informing unit which informs of the judgment result of said pixel shift photography judgment unit.

16. The image input unit according to claim 8, wherein said reliability evaluation unit calculates the reliability data based on the contrast of the image within the range

of each of the calculation area.

17. The image input unit according to claim 14, wherein  
said reliability evaluation unit calculates the reliability  
5 data based on the contrast of the image within the range  
of each of the calculation area.

18. An image input unit capable of performing pixel shift  
photography, said image input unit comprising:

10 a photographic optical system which forms an image  
of a subject in a predetermined position;

an image sensing unit which generates image data  
corresponding to the image of the subject;

15 a pixel shift mechanism which displaces said image  
sensing unit by a predetermined amount;

a pixel shift mechanism control unit which controls  
said pixel shift mechanism so as to displace said image  
sensing unit by the predetermined amount;

20 an image combining unit which generates image data  
for one image by combining the image data for a plurality  
of images output before and after the displacement of said  
image sensing unit;

a pixel shift evaluation value calculation unit which  
calculates a pixel shift evaluation value for judging whether  
25 the pixel shift photography has been normally performed or

not, based on the image data for a plurality of images output before and after the displacement of said image sensing unit;

a storage unit which stores the pixel shift evaluation value calculated by the pixel shift evaluation value calculation unit;

a storage control which controls storage of the pixel shift evaluation value in said storage unit; and

a failure judgment unit which judges a failure of said pixel shift mechanism, based on the pixel shift evaluation values of pixel shift photography of the last several times stored in said storage unit.

19. The image input unit according to claim 18, wherein said pixel shift evaluation value calculation unit calculates an amount of shift between the image data for the plurality of images output before and after the displacement of said image sensing unit, as the pixel shift evaluation value.

20. The image input unit according to claim 19, wherein when calculating the amount of shift between the image data for the plurality of images, said pixel shift evaluation value calculation unit calculates each amount of shift for a plurality of areas of the image data.

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21. The image input unit according to claim 20, further comprising a reliability evaluation unit which calculates reliability data indicating the reliability of the amount of shift in the plurality of areas calculated by said pixel shift evaluation value calculation unit;

said storage control unit storing the reliability data calculated by said reliability evaluation unit in said storage unit, corresponding to the data of amount of shift; and

said failure judgment unit judging the existence of abnormality in said pixel shift mechanism, based on the pixel shift evaluation values of photographing of the last several times stored in said storage unit and the reliability data.

22. The image input unit according to claim 21, further comprising a reliability evaluation unit which calculates reliability data indicating the reliability of the amount of shift in the plurality of areas calculated by said pixel shift evaluation value calculation unit;

said storage control unit correcting the amount of shift based on the reliability data calculated by said reliability evaluation unit and storing the corrected amount of shift in said storage unit; and

said failure judgment unit judges the existence of abnormality in said pixel shift mechanism, based on the

corrected amount of shift of the last several times stored  
in said storage unit.

23. The image input unit according to claim 18, wherein  
5 said pixel shift evaluation value calculation unit  
calculates the coincidence degree between the target image  
data when the image data output by said image sensing unit  
before being displaced by a predetermined amount is shifted  
for the predetermined amount, and the image data output after  
10 the displacement of said image sensing unit, as the pixel  
shift evaluation value.

24. The image input unit according to claim 23, wherein  
said pixel shift evaluation value calculation unit  
15 calculates the coincidence degree, respectively, for the  
plurality of areas of the image data, at the time of  
calculating the coincidence degree.

25. The image input unit according to claim 24, further  
20 comprising a reliability evaluation unit which calculates  
reliability data indicating the reliability of the  
coincidence degree in the plurality of areas calculated by  
said pixel shift evaluation value calculation unit;

said storage control unit storing the reliability data  
25 calculated by said reliability evaluation unit in said

storage unit, corresponding to the data of coincidence degree; and

said failure judgment unit judging the existence of abnormality in said pixel shift mechanism, based on the pixel shift evaluation values of photographing of the last several times stored in said storage unit and the reliability data.

26. The image input unit according to claim 24, further comprising a reliability evaluation unit which calculates reliability data indicating the reliability of the coincidence degree in the plurality of areas calculated by said pixel shift evaluation value calculation unit;

said storage control unit correcting the coincidence degree based on the reliability data calculated by said reliability evaluation unit and storing the corrected coincidence degree in said storage unit; and

said failure judgment unit judging the existence of abnormality in said pixel shift mechanism, based on the corrected coincidence degree of the last several times stored in said storage unit.

27. The image input unit according to claim 18, further comprising an pixel shift mechanism failure informing unit which informs of a failure in said pixel shift mechanism, when it is judged by said failure judgment unit that said

pixel shift mechanism has a failure.

28. The image input unit according to claim 18, further comprising:

5 an adjustment value storage unit which stores an adjustment value for driving said pixel shift mechanism; and

a pixel shift self calibration unit which judges whether it is necessary or not to change the adjustment value,  
10 and if it is necessary to change the adjustment value, calculating a new adjustment value to thereby change the adjustment value stored in said adjustment value storage unit.

29. The image input unit according to claim 28, further comprising an input unit for inputting an instruction so as to change the adjustment value that has been newly stored in said adjustment value storage unit to a value before the change or to an initial value by said pixel shift self  
20 calibration unit.

30. The image input unit according to claim 28, further comprising:

a frequency input unit for inputting the photographing  
25 frequency for the historical pixel shift evaluation values

stored in said storage unit;

said pixel shift self calibration unit calculating  
the new adjustment value, based on the historical pixel shift  
evaluation values for the number of times of photographing  
5 set by said frequency input unit.

31. The image input unit according to claim 25, wherein  
said reliability evaluation unit calculates the reliability  
data based on the contrast of the image within the range  
10 of each of the calculation area.

32. The image input unit according to claim 26, wherein  
said reliability evaluation unit calculates the reliability  
data based on the contrast of the image within the range  
15 of each of the calculation area.

33. An image input unit capable of performing pixel shift  
photography, said image input unit comprising:

a photographic optical system which forms an image  
20 of a subject in a predetermined position;

an image sensing unit which generates image data  
corresponding to the image of the subject;

a pixel shift mechanism which displaces said image  
sensing unit by a predetermined amount;

25 an adjustment value storage unit which stores an

adjustment value for driving said pixel shift mechanism;

a pixel shift mechanism control unit which controls  
said pixel shift mechanism based on the adjustment value  
stored in said adjustment value storage unit, to thereby  
5 displace said image sensing unit by a predetermined amount;

an image combining unit which generates image data  
for one image by combining the image data for a plurality  
of images output before and after the displacement of said  
image sensing unit;

10 a pixel shift evaluation value calculation unit which  
calculates a pixel shift evaluation value for judging whether  
the pixel shift photography has been normally performed or  
not, based on the image data for a plurality of images output  
before and after the displacement of said image sensing unit;

15 a selection unit which selects the pixel shift  
calibration mode; and

a self calibration unit which executes pre-pixel shift  
photography once or plural times, when the pixel shift  
calibration mode is selected, and re-calculates the  
20 adjustment value based on the pixel shift evaluation value  
for each pixel shift photography, calculated by said pixel  
shift evaluation value calculation unit, to thereby  
calculate a new adjustment value, and changes the adjustment  
value stored in said adjustment value storage unit to the  
25 new adjustment value.

34. The image input unit according to claim 33, wherein  
said pixel shift evaluation value calculation unit  
calculates an amount of shift between the image data for  
the plurality of images output before and after the  
5 displacement of said image sensing unit, as the pixel shift  
evaluation value; and

said self calibration unit calculates the new  
adjustment value based on the amount of shift.

10 35. The image input unit according to claim 34, wherein  
when the pixel shift calibration mode is selected, said self  
calibration unit sets an adjustment value larger than the  
adjustment value stored in said adjustment value storage  
unit by a predetermined amount and an adjustment value  
15 smaller than that by a predetermined amount in said pixel  
shift mechanism, and performs pixel shift photography twice,  
to re-calculate the adjustment value based on the amount  
of shift between the two pixel shift photography calculated  
by said pixel shift evaluation value calculation unit to  
20 thereby calculate a new adjustment value.

36. The image input unit according to claim 34, wherein  
when said pixel shift calibration mode is selected, said  
self calibration unit sets the adjustment value stored in  
25 said adjustment value storage unit in said pixel shift

mechanism to perform one pixel shift photography, and refers  
to the relational data between the adjustment value  
registered in advance and the amount of shift, based on the  
amount of shift calculated by said pixel shift evaluation  
5 value calculation unit, to thereby calculate the new  
adjustment value.

37. The image input unit according to claim 33, wherein  
said pixel shift evaluation value calculation unit  
10 calculates, as the pixel shift evaluation value, the  
coincidence degree between a target image data when the image  
data output by said image sensing unit before being displaced  
by a predetermined amount is shifted for the predetermined  
amount, and the image data output after the displacement  
15 of said image sensing unit; and

said self calibration unit calculates the new  
adjustment value based on the coincidence degree.

38. The image input unit according to claim 33, wherein  
20 when calculating the amount of shift or the coincidence  
degree, said pixel shift evaluation value calculation unit  
calculates the amount of shift or the coincidence degree,  
respectively, for the plurality of areas of the image data.



39. The image input unit according to claim 38, further comprising:

an reliability evaluation unit which calculates reliability data indicating the reliability of each amount  
5 of shift each coincidence degree in the plurality of areas calculated by said pixel shift evaluation value calculation unit; and

said self calibration unit calculates the new adjustment value based on the amount of shift or the  
10 coincidence degree, and the reliability data.

40. The image input unit according to claim 39, further comprising: an unacceptable subject informing unit which informs that it is necessary to change the subject or to  
15 change the distance of subject, when a part of or the whole of the reliability data calculated by said reliability evaluation unit does not reach a predetermined level.

41. The image input unit according to claim 33, further comprising:  
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a pixel shift mechanism abnormal failure judgment unit which judges whether the new adjustment value calculated by said self calibration unit is within a predetermined range or not, and when it is without the predetermined range, judges  
25 that said pixel shift mechanism has a failure; and

an pixel shift mechanism failure informing unit which informs of a failure of the pixel shift mechanism, when it is judged that said pixel shift mechanism has a failure by said pixel shift mechanism abnormal failure judgment unit.

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42. The image input unit according to claim 39, wherein said reliability evaluation unit calculates the reliability data based on the contrast of the image within the range of each of the calculation area.

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43. An image input unit capable of performing pixel shift photography, said image input unit comprising:

a photographic optical system which forms an image of a subject in a predetermined position;

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an image sensing unit which generates image data corresponding to the image of the subject;

a pixel shift mechanism which displaces said image sensing unit by a predetermined amount;

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an adjustment value storage unit which stores an adjustment value for driving said pixel shift mechanism;

a pixel shift mechanism control unit which controls said pixel shift mechanism based on the adjustment value stored in the adjustment value storage unit, to thereby displace said image sensing unit by a predetermined amount;

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an image combining unit which generates image data

for one image by combining the image data for a plurality of images output before and after the displacement of said image sensing unit;

5 a pixel shift evaluation value calculation unit which calculates a pixel shift evaluation value for judging whether the pixel shift photography has been normally performed or not, based on the image data for a plurality of images output before and after the displacement of said image sensing unit; and

10 a pixel shift photography control unit which controls to execute an operation repetitively in which, when a continuous pixel shift mode is selected, a pre-pixel shift photography of setting an adjustment value in said pixel shift mechanism, said pixel shift evaluation value  
15 calculation unit calculates the pixel shift evaluation value to thereby calculate a new adjustment value based on the calculated pixel shift evaluation value, and pre-pixel shift photography is performed again with the new adjustment value.

20 44. The image input unit according to claim 43, wherein the pixel shift photography control unit determines a final adjustment value based on the adjustment value calculated by the repetitively performed pre-pixel shift photography, and controls so that the final pixel shift photography is  
25 executed, based on the final adjustment value.

45. The image input unit according to claim 43, wherein  
said pixel shift evaluation value calculation unit  
calculates the amount of shift between the image data for  
the plurality of images output before and after the  
5 displacement of said image sensing unit, as the pixel shift  
evaluation value; and

the pixel shift photography control unit calculates  
the new adjustment value based on the amount of shift.

10 46. The image input unit according to claim 43, wherein  
said pixel shift evaluation value calculation unit  
calculates the coincidence degree between the target image  
data when the image data output by said image sensing unit  
before being displaced is shifted for the predetermined  
15 amount, and the image data output after the displacement  
of said image sensing unit, as the pixel shift evaluation  
value; and

the pixel shift photography control unit calculates  
the new adjustment value based on coincidence degree.

20

47. The image input unit according to claim 45, wherein  
said pixel shift evaluation value calculation unit  
calculates the amount of shift or the coincidence degree,  
respectively, for a plurality of areas of the image data,  
25 when calculating the amount of shift or the coincidence

degree.

48. The image input unit according to claim 46, wherein  
said pixel shift evaluation value calculation unit  
5 calculates the amount of shift or the coincidence degree,  
respectively, for a plurality of areas of the image data,  
when calculating the amount of shift or the coincidence  
degree.

10 49. The image input unit according to claim 47, further  
comprising a reliability evaluation unit which calculates  
reliability data indicating the reliability of each amount  
of shift or each coincidence degree in the plurality of areas  
calculated by said pixel shift evaluation value calculation  
15 unit;

the pixel shift photography control unit calculating  
the new adjustment value, based on the amount of shift or  
the coincidence degree, and the reliability data.

20 50. The image input unit according to claim 48, further  
comprising a reliability evaluation unit which calculates  
reliability data indicating the reliability of each amount  
of shift or each coincidence degree in the plurality of areas  
calculated by said pixel shift evaluation value calculation  
25 unit;

the pixel shift photography control unit calculating the new adjustment value, based on the amount of shift or the coincidence degree, and the reliability data.

5 51. The image input unit according to claim 44, wherein the pixel shift photography control unit repetitively executes the pre-pixel shift photography for a predetermined number of times, or until the pixel shift evaluation value becomes within a predetermined range.

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52. The image input unit according to claim 45, wherein the pixel shift photography control unit repetitively executes the pre-pixel shift photography for a predetermined number of times, or until the pixel shift evaluation value becomes within a predetermined range.

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53. The image input unit according to claim 46, wherein the pixel shift photography control unit repetitively executes the pre-pixel shift photography for a predetermined number of times, or until the pixel shift evaluation value becomes within a predetermined range.

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54. The image input unit according to claim 44, wherein the pixel shift photography control unit judges that said pixel shift mechanism has a failure, in the case where the

25

calculated new adjustment value exceeds a predetermined number of times or a predetermined range, in the pre-pixel shift photography, and informs of this matter.

5 55. The image input unit according to claim 45, wherein the pixel shift photography control unit judges that said pixel shift mechanism has a failure, in the case where the calculated new adjustment value exceeds a predetermined number of times or a predetermined range, in the pre-pixel  
10 shift photography, and informs of this matter.

56. The image input unit according to claim 46, wherein the pixel shift photography control unit judges that said pixel shift mechanism has a failure, in the case where the  
15 calculated new adjustment value exceeds a predetermined number of times or a predetermined range, in the pre-pixel shift photography, and informs of this matter.

57. The image input unit according to claim 44, further  
20 comprising an image storage unit which stores a combined image combined by said image combining unit,

the pixel shift photography control unit storing only the combined image having the best pixel shift evaluation value calculated by said pixel shift evaluation value  
25 calculation unit in the pre-pixel shift photography and the

main pixel shift photography, in said image storage unit.

58. The image input unit according to claim 45, further comprising an image storage unit which stores a combined  
5 image combined by said image combining unit,

the pixel shift photography control unit storing only the combined image having the best pixel shift evaluation value calculated by said pixel shift evaluation value calculation unit in the pre-pixel shift photography and the  
10 main pixel shift photography, in said image storage unit.

59. The image input unit according to claim 46, further comprising an image storage unit which stores a combined image combined by said image combining unit,

15 the pixel shift photography control unit storing only the combined image having the best pixel shift evaluation value calculated by said pixel shift evaluation value calculation unit in the pre-pixel shift photography and the main pixel shift photography, in said image storage unit.

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60. The image input unit according to claim 43, further comprising a mode selection unit which selects a normal pixel shift photography mode for generating the combined image by one pixel shift photography and the continuous pixel shift  
25 photography mode.



61. The image input unit according to claim 49, wherein said reliability evaluation unit calculates the reliability data based on the contrast of the image within the range of each of the calculation area.

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62. The image input unit according to claim 50, wherein said reliability evaluation unit calculates the reliability data based on the contrast of the image within the range of each of the calculation area.

10

63. An image input method for performing pixel shift photography, comprising the steps of:

acquiring a first image data corresponding to an image of a subject with an image sensing unit;

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displacing said image sensing unit by a predetermined amount;

acquiring a second image data corresponding to an image of the subject with said image sensing unit after the displacement of said image sensing unit;

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generating image data for one image by combining the first image data and the second image data; and

judging whether the pixel shift photography has been normally performed or not, based on the first image data and the second image data.

25

64. An image input method for performing pixel shift photography, comprising the steps of:

acquiring a first image data corresponding to an image of a subject with an image sensing unit;

5 displacing said image sensing unit by a predetermined amount by a pixel shift mechanism;

acquiring a second image data corresponding to an image of the subject with said image sensing unit after the displacement of said image sensing unit;

10 generating image data for one image by combining the first image data and the second image data;

calculating a pixel shift evaluation value for judging whether the pixel shift photography has been normally performed or not, based on the first image data and the second  
15 image data;

storing the pixel shift evaluation value in a storage unit; and

judging a failure or normal operation of said pixel shift mechanism, based on the pixel shift evaluation values  
20 obtained by performing the pixel shift photography for several times and stored in said storage unit.

65. An image input method for performing pixel shift photography, comprising the steps of:

25 acquiring a first image data corresponding to an image

of a subject with an image sensing unit;

displacing said image sensing unit by a predetermined amount by driving a pixel shift mechanism based on an adjustment value stored in a storage unit;

5        acquiring a second image data corresponding to an image of the subject with said image sensing unit after the displacement of said image sensing unit;

generating image data for one image by combining the first image data and the second image data; and

10        executing pre-pixel shift photography once or plural times, when a self calibration mode is selected to calculate a pixel shift evaluation value for judging whether the pixel shift photography has been normally performed or not based on the first image data and the second image data, and  
15        calculating a new adjustment value by re-calculating the adjustment value, based on the calculated pixel shift evaluation value to change the adjustment value stored in said storage unit to the new adjustment value.

20    66. An image input method for performing pixel shift photography, comprising:

a first step of acquiring a first image data corresponding to an image of a subject with an image sensing unit;

25        a second step of displacing said image sensing unit

by a predetermined amount by driving a pixel shift mechanism based on an adjustment value stored in a storage unit;

a third step of imaging the subject image on said image sensing unit displaced by the predetermined amount to output  
5 second image data;

a fourth step of calculating a pixel shift evaluation value for judging whether the pixel shift photography has been normally performed or not based on the first image data and the second image data;

10 a fifth step of calculating a new adjustment value by re-calculating the adjustment value, based on the calculated pixel shift evaluation value, and changing the adjustment value stored in said storage unit to the new adjustment value;

15 a sixth step of repeating said first to fifth steps for a predetermined number of times, or until the new adjustment value becomes within a predetermined range; and

a seventh step of performing pixel shift photography with the final adjustment value.

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67. A computer readable medium for storing instructions, which when executed on a computer, causes the computer to perform the steps of:

acquiring a first image data corresponding to an image  
25 of a subject with an image sensing unit;

displacing said image sensing unit by a predetermined amount;

acquiring a second image data corresponding to an image of the subject with said image sensing unit after the displacement of said image sensing unit;

generating image data for one image by combining the first image data and the second image data; and

judging whether the pixel shift photography has been normally performed or not, based on the first image data and the second image data.

68. A computer readable medium for storing instructions, which when executed on a computer, causes the computer to perform the steps of:

acquiring a first image data corresponding to an image of a subject with an image sensing unit;

displacing said image sensing unit by a predetermined amount by a pixel shift mechanism;

acquiring a second image data corresponding to an image of the subject with said image sensing unit after the displacement of said image sensing unit;

generating image data for one image by combining the first image data and the second image data;

calculating a pixel shift evaluation value for judging whether the pixel shift photography has been normally

performed or not, based on the first image data and the second image data;

storing the pixel shift evaluation value in a storage unit; and

5       judging a failure or normal operation of said pixel shift mechanism, based on the pixel shift evaluation values obtained by performing the pixel shift photography for several times and stored in said storage unit.

10   69.   A computer readable medium for storing instructions, which when executed on a computer, causes the computer to perform the steps of:

acquiring a first image data corresponding to an image of a subject with an image sensing unit;

15       displacing said image sensing unit by a predetermined amount by driving a pixel shift mechanism based on an adjustment value stored in a storage unit;

acquiring a second image data corresponding to an image of the subject with said image sensing unit after the  
20   displacement of said image sensing unit;

generating image data for one image by combining the first image data and the second image data; and

executing pre-pixel shift photography once or plural times, when a self calibration mode is selected to calculate  
25   a pixel shift evaluation value for judging whether the pixel

shift photography has been normally performed or not based on the first image data and the second image data, and calculating a new adjustment value by re-calculating the adjustment value, based on the calculated pixel shift evaluation value to change the adjustment value stored in  
5 said storage unit to the new adjustment value.

70. A computer readable medium for storing instructions, which when executed on a computer, causes the computer to  
10 perform:

a first step of acquiring a first image data corresponding to an image of a subject with an image sensing unit;

a second step of displacing said image sensing unit  
15 by a predetermined amount by driving a pixel shift mechanism based on an adjustment value stored in a storage unit;

a third step of imaging the subject image on said image sensing unit displaced by the predetermined amount to output second image data;

20 a fourth step of calculating a pixel shift evaluation value for judging whether the pixel shift photography has been normally performed or not based on the first image data and the second image data;

a fifth step of calculating a new adjustment value  
25 by re-calculating the adjustment value, based on the

calculated pixel shift evaluation value, and changing the adjustment value stored in said storage unit to the new adjustment value;

5 a sixth step of repeating said first to fifth steps for a predetermined number of times, or until the new adjustment value becomes within a predetermined range; and

a seventh step of performing pixel shift photography with the final adjustment value.